Testing Revisions - CSS
The module presents the concepts used in the CSS programming language.

Introduction

Cascading Style Sheets (abbreviated CSS) are used to describe how (X)HTML or XML text is to be presented. This module is currently a commented link list of important entry points for reading about CSS.

This module gives a simple example how a CSS style sheet works.

Content of this module

- CSS rules
- Internal and external style sheets
- Reference
- Tutorial
- Layout with CSS
- Validator
- CSS 3
- Implementation
- CSS versus XSL
- CSS in mobile devices
- Media queries
- Frameworks
- Web fonts
- XHTML plus CSS to PDF
- Further Reading

CSS rules

A CSS file consists of statements which are either at-rules or rule sets (often just called rules). A rule set (rule) consists of a selector and a declaration block which contains one or more declarations (more see CSS 2.1 specification). A declaration contains a property and a value (e.g. "color" and "green"), see example below. These rules describe how the formatting should take place.

Below are some sample rules. In the first part one or several selectors are given and in the second part there are one or more attribute-value pairs enclosed by curly brackets.

```
/* Sample rules */

h1, h2 {color: green}

#box {width: 70%}

.topic {color: red}
```

Selector types

- `h1` and `h2` are tag selectors
- `#box` is a selector for an identification
- `.topic` is a selector for a class

A series of [tests](#) for selectors.

Internal and external style sheets

A style sheet may reside in a separate file (**external style sheet**) or within an (X)HTML file (**internal style sheet**).

```
External style sheet
```

```
<head>
<link rel="stylesheet" type="text/css" media="screen,
projection, handheld, print" href="css/general.css" />
<link rel="stylesheet" type="text/css" media="print"
href="css/ourPrintStyleSheet.css" />
</head>
```

In the case of the code above taken from a HTML file we load a general style sheet for different kinds of output media called `general.css` and a specific one for printing (`ourPrintStyleSheet.css`). The style sheet for printing adds and overrides some rules to put the content onto paper.

```
Internal stylesheet (HTML)
```

```
<style type="text/css">
  h1 {
      color: green;
      }
  </style>
```

Internal stylesheet (XHTML)

```
<style type="text/css"><![CDATA[
  h1 {
    color: green;
    }
]]></style>
```

@import rule
The `@import` rule ([ref.](#)) allows you to import rules from another style sheet into your current one. For an example see ´web fonts´ below.

Reference

CSS 2.1 [specification](#) (implemented by most browsers); an [index](#)

All W3C [CSS standards and drafts](#)

The link above includes the documents commonly called CSS 3 which consists of different modules. They are implemented to various degrees in the current browsers.

Tutorial

w3.org: [Starting with HTML and CSS](#) (basic introduction)

Complete course with interactive exercises [w3schools](#)

Searching for the key words `css cheat sheet` provides helpful links if you have learned CSS in the past. This brings up for example this list which leads to [30 examples](#) .

Layout with CSS

For doing layout with CSS the 'position' attribute and the box model are used. In the past this was difficult because the box model implemented by the Internet Explorer (IE) differed from the web standard and from the box model implemented by other browsers. In the meantime the Internet Explorer supports the standard W3C box model so using CSS in modern browsers is made easier as there needs not to be a 'switch' anymore for IE and the other browsers. CSS 3 introduces the `box-sizing` property which allows to set how the box size is calculated (https://css-tricks.com/box-sizing/).

CSS box model

CSS Box Model
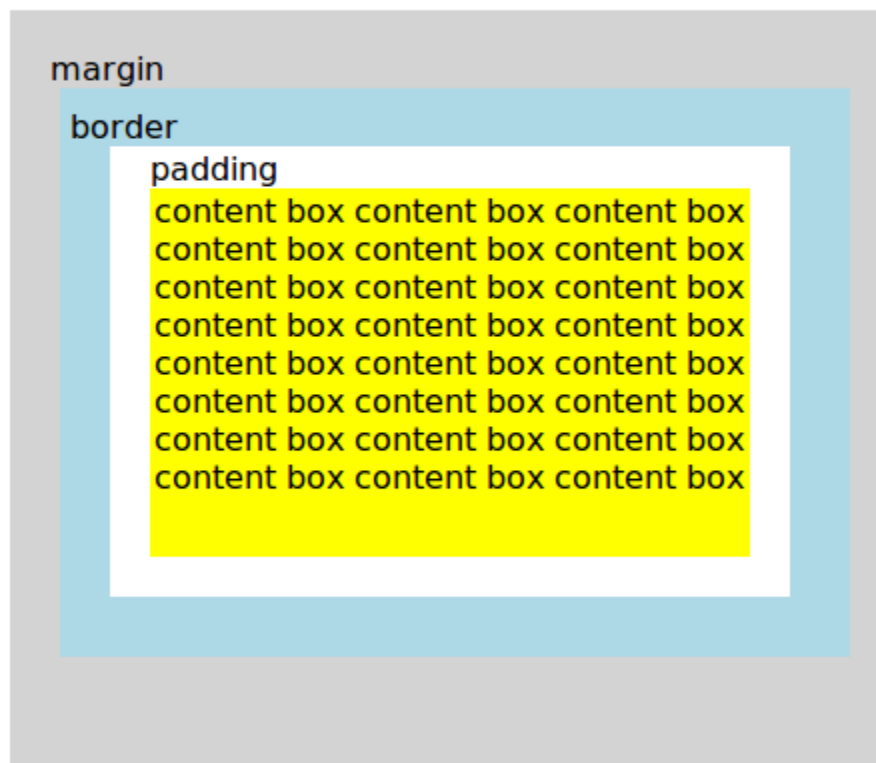
The W3C standard box model

How to position elements
http://learnlayout.com/position.html

The default is that elements are positioned `static`. This means that the element is not positioned in special way. It is in the normal flow of elements.

relative

```css
.relative1 {                                        CSS
  position: relative;
}
.relative2 {
  position: relative;
  top: -20px;
  left: 20px;
  background-color: white;
  width: 500px;
}
```

```
<div class="relative1">
    relative behaves the same as static unless you add some extra properties.
    <div class="relative2">                                            </div>
        Setting the top, right, bottom, and left properties of a relatively-
        positioned element will cause it to be adjusted away from its
        normal position. Other content will not be adjusted to fit into any
        gap left by the element.
                                                            </div>
```

Validator

A validator checks if a CSS file contains no erroneous CSS selectors and rules. [W3C validator](#)

CSS 3

CSS3 (CSS level 3) builds on CSS level 2. Unlike CSS2 which is a single specification document CSS3 is devided into several separate

recommendations documents. They are called "modules". See [table of specifications](#) of the W3C.

News about the implementation of the new features [css3.info](#). Web site which tests [CSS3 implementation](#) in browsers.

Interactive construction of CSS3 code (e.g. rounded corners, shadow, etc) [css3please.com](#)

- Media queries ([W3 recommendation](#) June 2012); [media query examples](#) (cnx module)
- Selectors level 3 ([W3C recommenation](#), Sept 2011), [tests](#)
- [Multicolumn Layout](#) e.g. `column-width: 20em;`
- Rounded Corners ([exploration / code generator](#))
- Web Fonts (see [example below](#))
- Text Wrapping ([CSS Text Module Level 3](#))
- Text Stroke
- Transitions
- 2d Transforms (usage [example](#) to create 3d effect)
- Animations ([examples](#))
- Gradients

Implementation

- http://www.quirksmode.org/compatibility.html
- http://www.caniuse.com/ answers in which web browsers a particular CSS selecter or attribute may be used.
- Gecko (used in Firefox) [CSS support](#) chart

Debugging

There is an add-on called [Firebug](#) to the Firefox web browser which helps to debug CSS style sheets. It helps as well to learn about CSS http://getfirebug.com/css.

InternetExplorer 8, 9 and 10 give access to developer tools [(Manual)](#) through the F12 key.

CSS versus XSL

Why does W3C recommend two different style languages? Which one should you use? Basically, the rule can be summarized very succinctly: Use CSS when you can, use XSL when you must.
http://www.w3.org/Style/CSS-vs-XSL

CSS in mobile devices

CSS mobile (current status) aims at describing a subset of CSS useful for mobile devices.

Media queries

CSS **media queries** (W3C spec) allow that style rules are only applied to specific output media, i.e. screen, print, handheld or other. They can as well depend on conditions like display width. The following example demonstrates the idea

```
@media (max-width: 320px) {
        /* rules for mobile devices go here */
  }

@media (min-width: 321px) {
        /* rules for devices with larger
screens go here */
  }
```

More about media queries; collection of example sites

Use of media queries to implement a responsive navigation, i.e. a navigation which works on desktop or laptop computers where there is a cursor and on touch devices (mobile phones, tablets).

Frameworks

A CSS framework is one or more CSS files which include style declarations on which you can build by either extending or replacing them. The aim is that you do can rely on ready-made designs and do not need to create workarounds for the browser inconsistencies.

[Skeleton](): Responsive boilerplate

[Bootstrap]() Bootstrap is a popular HTML, CSS, and JS framework for developing responsive projects.

[http://purecss.io/]() -- a set of small, responsive CSS modules; see also [https://smacss.com/]() (Scalable and Modular Architecture for CSS).

Web fonts

Current browsers may load fonts front the web (`@font-face` property) and thus support the font part of [CSS 3]().

Google font service
Google provides a [service]() from which you can choose free fonts. It generates some code which you can add to your website. They as well provide a [font API]() and host a [repository]() with free fonts. So you might add the **Gentium** font by adding an import rule at the beginning of your style sheet

```
@import url(http://fonts.googleapis.com/css?
family=Gentium+Basic&subset=latin,latin-ext);
```

But you may as well copy a free font to a directory of your own website and serve it from there. For an example of loading a font see below. Gentium is a free font under the Open Font License (OFL).

```
@font-face {
  font-family: Gentium;
  src: url(http://yoursite/fonts/Gentium.ttf);
}

p { font-family: Gentium, serif; }
```

XHTML plus CSS to PDF

- [Printing a book with CSS](#) (PrinceXML)
- [pd4ml](#) (free for non-commercial use)
- ...

Further Reading

[Useful coding techniques](#)

W3C CSS [Test Harness](#)

HTML5
HTML5 is the fifth revision of the HTML standard. It provides various enhancements and is still work in progress. This module provides links to information about HTML5 which lead you into the topic in-depth.

Introduction

The structure of a HTML5 document may be simpler than that of a HTML4 document. There is only one document type `<!DOCTYPE html>`. Older browsers interpret this fine as they do not know about the HTML5 document type and try to do the best they can to render the page. Newer browsers know how to interpret HTML5.

The Web Hypertext Application Technology Working Group (WHATWG) does not speak of HTML5. They call it just HTML without a version number.

Minimal document

```
<!DOCTYPE html>
<html>
<head>
<title>The title of the document</title>
</head>

<body>
The text ...
</body>

</html> Simple correct HTML5 template
(http://www.w3.org/TR/html5/semantics.html#semantics)

<?xml version="1.0" encoding="UTF-8"?>
<html xmlns="http://www.w3.org/1999/xhtml">
<head>
<title>The title of the document</title>
</head>

<body>
The text ...
</body>
```

```
</html> The same as above but in XHTML syntax
```

HTML5 with CSS and JavaScript

In the strict sense HTML5 is the follow-up specification to HTML4. But people often mean more when they talk about HTML5. HTML5 used as umbrella term includes extended functions of CSS (CSS3) and JavaScript (ECMAscript version 5). With this it is possible to write complete web applications in one file.

```
Minimal template with CSS and JavaScript

<?xml version="1.0" encoding="UTF-8"?>
<html xml:lang="en" lang="en">
<head>

<style><![CDATA[

h1   {color: red;
     }

]]>
</style>



</head>


<body>

<h1>Beverages</h1>
<ul id="beverages">
<li>Coffee</li>
<li>Tea</li>
<li>Milk</li>
</ul>
<span id="note"></span>


<script>
<![CDATA[
```

```
// JavaScript statements
// This will be evaluated after the document has been loaded
// making it possible to easily access DOM elements.

var list = document.getElementById("beverages");
var listlength = list.children.length;
console.log(listlength);
var note = document.getElementById("note");
console.dir(note);
note.textContent = listlength + " types of beverages";



]]>
</script>


</body>
</html>Template in XHTML5 syntax demonstrating access to a DOM
element
```

View the XHTML5 template locally
View the [template](#) in your browser. You then may save it and start changing it. Make sure it has the file extension `.xhtml` for IE9 to display a local file in IE9 mode. In addition Firefox and Opera still display it properly if the file name extension is `.xml`.

Comments

- The document starts with a declaration that it is encoded as an XML file.
- The root element is an `<html>...</html>` node. It has two daughter nodes: `<head>...</head>` and `<body>...</body>`.
- The head contains the style information. It is contained in `<style type="text/css">...</style>`.
- The actual data to be displayed is in the body part.
- The CDATA tells the XML parser to treat the following code as data. This means that wedges (`<>`) should not be considered
- The JavaScript code shows the method `getElementById` to access the Document Object Model (DOM). All HTML elements are accessible this way.
- The JavaScript code is executed once at the end of loading the file.

- The `children` method gives back all HTML elements of a particular parent HTML Element.
- `console.log(listlength)` and `console.dir(note)` may be used for debugging purposes. The output will be displayed on the console accessible for example in Firefox 9 through 'Tools'/'Web Developer'/'Web Console'. Other browsers have similar tools.
- This example contains all the CSS and JavaScript code. Most often this code is put into two separate files. Then two links in the main HTML file connect to them.

Display in Firefox 9 with web console opened
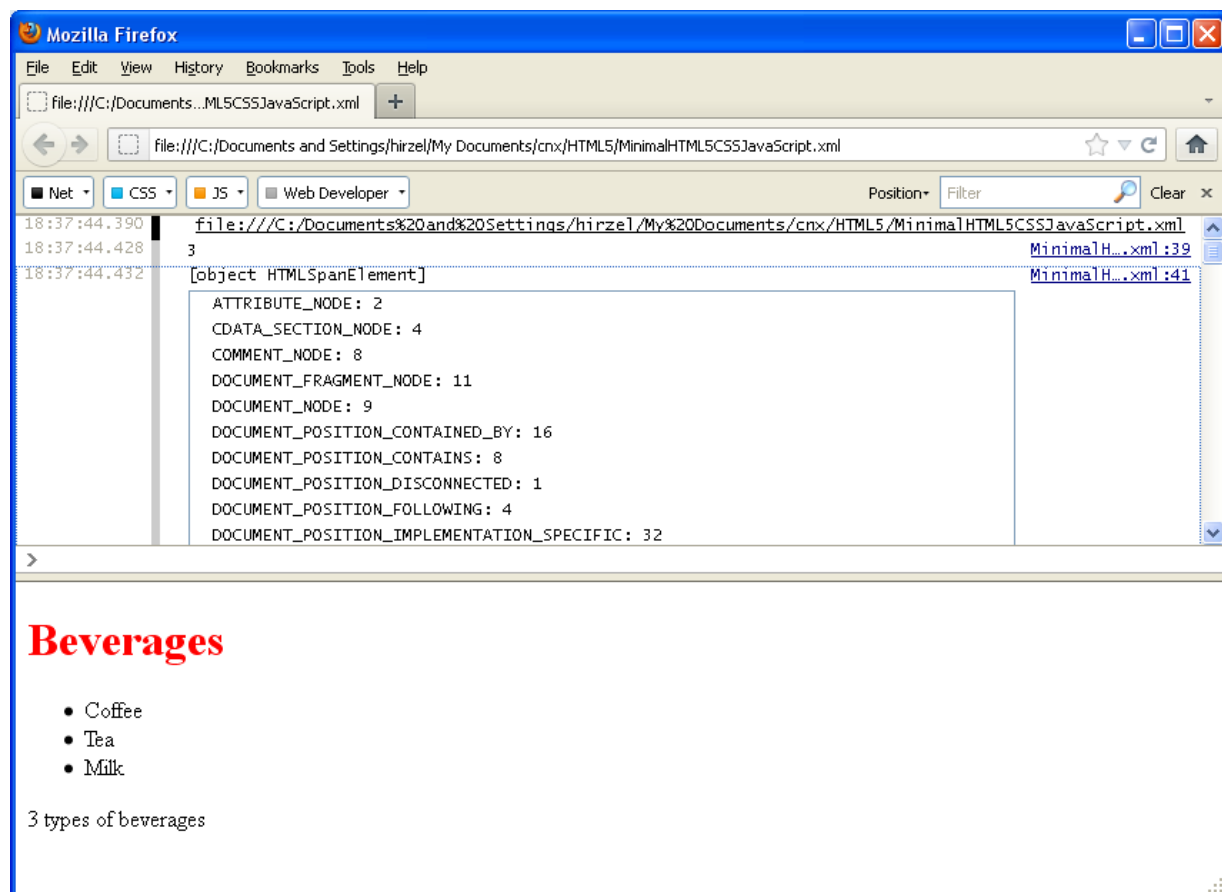
MSDN about IE9

MSDN: "Adding a `<!DOCTYPE>` pointing to an XHTML DTD does NOT influence whether a page is treated as HTML or XHTML. XHTML support for files on the web can only be triggered by the MIME type of the response from the web server. This is true both in IE9 and other browsers. This

MIME type should be "application/xhtml+xml" (though you can technically use any supported XML mime type). Local files with ".xht" or ".xhtml" extensions will also be opened as XHTML".

More on DOM access
[Document Object Model](#)

Further Reading

HTML5 in action
[First chapter](#) of Robert Crowther, Joe Lennon, and Ash Blue, HTML5 in Action, Manning, February 2014. [Chapter 5](#); source code on [github](#).

Comparison to other technologies
[2011 - The Year HTML5 Won](#)

Dive into HTML 5
[on-line book](#) by Mark Pilgrim; [CC-BY-3.0](#); [updated fork](#); published on paper by O'Reilly.

Extended version of the template
Module [anonymous functions](#) has an example where a button is added to the XHTML template given in this module.

XHTML5 editor
There are many editors for creating XHTML5 files. Netbeans for example may be [used for this](#).

On-line editor
[Mozilla thimble](#) is an on-line editor for learning HTML5.

HTML5 please
A [web site](#) with recommendations which HTML5 features are ready for use and under which conditions.

HTML5 test
This [web site](#) has a browser feature detection test as well as references to the W3C standard for every feature.

Further reading specific topics

Local storage

HTML5 capable browsers have added a new [local storage](#) facility which allows to save data between subsequent visits of a web page. This feature is similar to cookies but with more storage capacity and it is better accessible.

How to write a game

A tutorial which shows http://html5center.sourceforge.net/how-to-write-a-brikbloc-game-with-html5-svg-and-canvas

More links

Presentation

http://tantek.com/presentations/2011/10/html5-now/ (written in HTML 5)

Specifications

http://www.w3.org/TR/html5/ and http://www.whatwg.org/specs/web-apps/current-work/multipage/

Microsoft Internet Explorer 9

Microsoft Internet Explorer 9 was released in March 2011. It adopted HTML5 to a large part, something other browser implementations had done before. [Learn HTML5](#) (Internet Explorer Developer Center). [IE9 Developer Tools](#). More about [IE9 and XHTML](#).

Differences from HTML4

http://dev.w3.org/html5/html4-differences/

Mozilla Developer Network

[HTML5](#) start page

IBM developerWorks

[HTML 5 fundamentals](#)

modernizr

http://www.modernizr.com/. Modernizr is a JavaScript library which helps to detect if a HTML5 feature is supported in a web browser or not.

How well does a browser support HTML5?
https://html5test.com/